

3.0 QUALITY ASSURANCE/QUALITY CONTROL

3.A General Sampling and Analytical Information

Sampling protocols outlined in this document are to be followed. CFL is responsible for obtaining data necessary to comply with this WAP, and will ensure adherence to guidelines set forth in the referenced standards listed in Section 2.C or equivalents, as appropriate. Approved sample collection vessels and preservation techniques from 40 CFR 136.3 or equivalent will be followed as applicable and appropriate. These will include preservation in plastic or glass sample containers provided by the laboratory and storage in a sample refrigerator or cooler for shipment to the laboratory. CFL reserves the option to choose alternate laboratories for testing provided equivalent QA/QC standards are met. The following applies to samples collected for laboratory analysis (i.e. quarterly analysis).

COC Form Content

Each sample taken will be accompanied by facility or contract laboratory Chain of Custody (COC) form that provides a record of sample handling starting with sample acquisition, documenting the process up to laboratory analysis. Samples taken are to be logged in the field using the COC, sealed, and delivered to the laboratory with a COC form. The COC form shall provide the following items collected by the sampler:

1. Sample ID including code or name, in addition to date and time;
2. Name of sample collector; (include sampling company name if not site personnel);
3. Sample collection method;
4. Sample collection date;
5. Sample collection point; and
6. Sample presentation technique, as applicable

Sample container label will also include a COC seal. Sample chain-of-custody will be followed at all times during the sampling and subsequent analysis. Chain-of-custody will be used to document the handling and control necessary to identify and trace a sample from collection through to final analytical results. Standard laboratory COC forms that document the times and dates of all personnel handling the sample, along with standard labels and container seals sufficient to distinguish between samples and prevent tampering, will be acceptable.

Reporting and Records Retention

Analytical reports and regulatory submittals regarding the nature and composition of injected fluids are to be maintained in the well files until authorization is obtained from US EPA and EGLE/Oil, Gas and Minerals Division (OGMD), in writing, to discard the

records. All laboratory reports submitted to US EPA and EGLE/OGMD will include, at a minimum, the following:

1. Test description;
2. Analytical method for parameter detection;
3. Identification of analysis date and analyst;
4. Result and units; and
5. Analytical reporting limits.

The following sections present QA/QC parameters which will be followed to help to assure the adequacy of the sampling and analytical techniques for wellhead sampling and analysis described in this plan.

3.B Sampling Controls

1. Equipment Blanks

Fluid samples will be obtained directly from the sample accumulation container before being sealed in the sample container shipped to the laboratory. In this case, no equipment cleaning blanks will be required. If samples cannot be directly placed in the bottles intended for preservation and shipment, equipment blanks will be taken as deemed appropriate by CFL.

2. Trip Blanks

If the laboratory analysis is ever suspect because it contains anomalous parameters, trip blanks will be collected to assess in-transit contamination. The trip blank will consist of sample containers filled and sealed at the laboratory with laboratory-provided deionized (DI) water that accompany the sample containers used throughout the sampling event. The sample containers shall be handled in the same manner as the samples. The trip blank(s) will be sent to the laboratory for analysis of, at a minimum, the same parameters specified in the sampling plan above. A minimum of one (1) trip blank per sampling event will be utilized, when deemed necessary. At the discretion of CFL, trip blanks may be submitted with any sample to verify representativeness of the sampling program.

3. Sample Duplicates

On advance written request of US EPA and EGLE/OGMD, duplicate samples will be taken to further assess the QA/QC program of the laboratory conducting the analysis. Such samples will be drawn from the same site from which primary samples will be taken consecutively from the same sampling

tap or sample location to ensure representativeness. The duplicate will be labeled with a sample number that will not conflict with the other samples, but will not be discernable to the laboratory as a duplicate sample. Upon the request of US EPA or at the discretion of site representatives, one duplicate sample per selected sampling event will be taken and analyzed for the same parameters as the sampling event.

3.C Analytical Controls

1. Equipment Calibration

The selected analytical laboratories must maintain QA/QC records of the frequency and type of instrument calibration performed at the laboratory and in the field. Any calibration of thermometers, gauges, chromatographs, spectrometers and other analytical equipment will be conducted according to appropriate instrument manufacturer specifications and manufacturer recommended frequencies or as dictated by applicable laboratory QA/QC plans that have been developed by the laboratory. Valid calibration certificates for instruments used offsite by a certified lab will be maintained at that facility. Calibration data for onsite field testing or continuous monitoring will be maintained as part of the site well records.

2. Data Reduction

Transcription of the raw data into the reportable units is conducted by the laboratory in accordance with the selected laboratory Q/A plan. Data reduction utilized in the analysis and reporting process is presented in the reports to the US EPA for each sampling and analysis event. Data is recorded on hand written or computer work sheets that include identification data, sample data and all data required for calculations, or on computer print-outs accompanied by operator notes and summaries.

3. Data Verification

Data verification is conducted after each sampling event by assigned laboratory personnel and includes, at a minimum, review of chain-of-custody forms, equipment calibration records and data completeness. Spot checks of raw data versus reported data are performed to review math accuracy, significant numbers and reporting units. In addition, certified laboratory standard quality assurance/quality control requirements or checklists are utilized to verify individual test methods such as blanks, standards, and for comparisons of internal lab test duplicate results. Problems with any of these items will be indicated in the analytical report presented to the agency.

4. Internal Quality Control

Per the laboratory QA/QC program, certified quality control samples from appropriate commercial sources or the US EPA, may be run periodically with sample batches. Internal quality control are addressed by disclosure of the laboratory's use of blanks, blind standards, matrix spikes and matrix spike duplicates, preparation of reagents, and laboratory duplicate or replicate analyses.

3.D Actions

1. Corrective Actions

Corrective actions are implemented by laboratories if the analytical or sampling methods do not achieve plan objectives or data verification identifies inconsistencies in the results. Actions may entail re-sampling the waste stream and/or re-analyzing the fluid for a particular parameter, re-calibrating an analytical device, or other appropriate actions as dictated by the specific situation encountered. Action levels are typically taken in accordance with any applicable standards from USEPA "Methods for the Chemical Analysis of Water and Wastes" or "Standard Methods for the Examination of Water and Wastewater". CFL representatives may, at their discretion, require re-sampling and retesting to confirm results that fall outside the historical range of expected analytical results, or outside equipment calibration curves.

2. Reports to US EPA Region 5 and EGLE/OGMD

Reports of waste analysis to US EPA and EGLE/OGMD will contain a table summarizing the sampling date, units and analytical result for each of the parameters listed in table 2-1 of this document. Additionally, analytical results (i.e. data), including chain of custody forms, will be submitted to US EPA and EGLE/OGMD.

3.E Re-Characterization

CFL shall review the results of quarterly leachate analysis to ensure that injectate is sufficiently characterized. At the discretion of CFL or at the written request of EPA or EGLE/OGMD, re-characterization efforts may be conducted should a significant change occur in the injectate composition based on quarterly analyses, or if necessitated or required by process changes or new regulations.

The waste stream will be re-characterized as deemed necessary by CFL if analyses shows a significant change in parameter concentration, particularly toxicity characteristic compound composition that might affect the non-hazardous nature of the waste. In this instance, sampling may be performed more frequently to obtain more

representative analysis of waste composition, to ensure that the overall composition of injectate is still non-hazardous. Any future revisions to the WAP, upon approval, will become part of the administrative record and constitute a minor modification of the permit upon submittal by CFL.

Environmental Assessment Report

Carleton Farm Wells

August 4, 2019

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ENVIRONMENTAL ASSESSMENT REPORT

Carleton Farms Landfill

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1.0 INTRODUCTION

On July 23, 2019, Dortman Environmental, L.L.C. (DE), performed the field investigations for environmental assessments of two (2) proposed 200-foot by 200-foot well pads proposed at Carleton Farms Landfill. The proposed well pads are located in in Section 36, Town 4S, Range 8E, Sumpter Township, Wayne County, Michigan. The purpose of the field investigation was to document the natural resources identified within Rule R2311 (2)(e)(iv)(A-F) of Part 625, Mineral Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 625). Specifically, this report provides information relative to the surface waters, floodplains, natural rivers, critical dune areas, threatened and endangered species, and other environmentally sensitive areas located within 1,320 feet of the proposed wells.

2.0 METHODS

Prior to the field investigation, DE reviewed various resources to gain background information about the subject property. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) Wetlands Map Viewer, the U.S. Department of Agriculture (USDA) Web Soil Survey, a Michigan Natural Features Inventory Information Request, the National Hydrography Dataset, the Federal Emergency Management Agency Map Service Center, and Google Earth Imagery, were all queried for information to be referenced during the field investigation.

DE reviewed the well pad limits for any trees with a diameter at breast height of 3-inches or greater within the limits of the proposed well pads. In addition, the major vegetative community types were surveyed and the identified plant species were recorded. A floristic quality assessment was conducted for each vegetative community identified using the methodology described in the Floristic Quality Assessment (Herman, et. al., 2001). A floristic quality index (FQI) was calculated for each vegetative community. The FQI was determined by first calculating a mean coefficient of conservatism (*C value*) for each vegetative community type. The *C value* is a number ranging from 0 to 10 that indicates the fidelity of a plant species to a particular natural community type. Plants that occur in almost any kind of habitat have a *C value* of 0, and plants that only occur in rare communities have a *C value* of 10. The FQI of a site is determined by multiplying the mean coefficient of conservatism by the square root of the total number of plant taxa. According to Floristic Quality Assessment, natural communities with an FQI value less than 20 have “minimal significance from a natural quality perspective,” and natural communities with an FQI greater than 35 are “floristically important from a statewide perspective.” Thus, a rating of “low quality” is given to communities with an FQI less than 20, a rating of “moderate quality” is given to communities with an FQI between 20 and 35, and a rating of “high quality” is given to communities with an FQI of 35 or greater.

The soils within the well pads were investigated by digging 24” deep soil pits. The soil hue, value (lightness), and chroma (color purity), were documented at each soil pit using a Munsell Color Chart. The soil texture was also documented at each soil pit.

Wetlands were investigated by following the procedures required in Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Furthermore, specific methodology was followed as set forth in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual including the Northcentral and Northeast Regional Supplement.

Lastly, DE performed search surveys by walking transects spaced at 10-foot intervals across Well Pads 1, and walking all the vegetated area within Well Pad 2, to survey for all threaten and endangered species that are listed in the sections within 1,320 feet of the propose wells.

3.0 RESULTS AND DISCUSSION

Listed below are the findings for each of the individual evaluations within the action area.

3.1 Tree Survey

Upon inspection of the sites, both Well Pad 1 and Well Pad 2 as identified in Figure 1 were found to be completely void an any trees. Well Pad 1 is entirely a reverting agricultural field and is currently an old field with low growing forbs. A small portion of Well Pad 1 is also developed for a road. Well Pad 2 is predominantly developed as an effluent collection system and roads with only a small border of mowed vegetation.

3.2 Vegetative Communities

A single vegetative community was identified and surveyed within the limits of proposed Well Pad 1. The vegetative community within Well Pad 1 is an old field that is dominated by agricultural forbs and grasses along with scattered native graminoids (grasses, sedges, and rushes) and occupies the majority of the proposed well pad limits with the exception of the road area. The vegetative species identified within this area are listed in Table 1 below.

Table 1 - Well Pad 1 Plants

Scientific Name	Common Name	FQI Rating
<i>Agrostis gigantea</i>	redtop	0
<i>Carex vulpinoidea</i>	fox sedge	1
<i>Cichorium intybus</i>	common chicory	0
<i>Cirsium arvense</i>	Canada thistle	0
<i>Daucus carota</i>	Queen Ann's Lace	0
<i>Hordeum jubatum</i>	fox tail barley	0
<i>Juncus dudleyi</i>	Dudley's rush	1
<i>Juncus torreyi</i>	Torrey's rush	4

<i>Lythrum salicaria</i>	purple loosestrife	0
<i>Phalaris arundinacea</i>	reed canary grass	0
<i>Phleum pratense</i>	timothy	0
<i>Plantago lanceolata</i>	English plantain	0
<i>Plantago major</i>	common plantain	0
<i>Prunella vulgaris</i>	common selfheal	0
<i>Rumex crispus</i>	curly dock	0
<i>Schedonorus arundinaceus</i>	tall fescue	0
<i>Scirpus atrovirens</i>	green bulrush	3
<i>Scirpus cyperinus</i>	woolgrass	5
<i>Sonchus oleraceus</i>	common sowthistle	0
<i>Symphyotrichum ericoides</i>	white heath aster	3
<i>Symphyotrichum pilosum</i>	hairy white old-field aster	1
<i>Taraxacum officinale</i>	common dandelion	0
<i>Trifolium pratense</i>	red clover	0
<i>Trifolium repens</i>	white clover	0

Many of the plant species identified within the limits of proposed Well Pad 1 were non-native adaptive species and, therefore, had an FQI rating of zero (0). The mean *C value* of vegetative community was calculated to be 0.75 and the FQI was calculated at 3.67, the giving this area a low-quality rating.

The vegetative community within the limits of proposed Well Pad 2 is an area that is routinely mowed and contains has much less vegetative diversity compared to that within proposed Well Pad 1. The vegetative species identified within this area are listed in Table 2 below.

Table 2 - Well Pad 2 Plants

Scientific Name	Common Name	FQI Rating
<i>Chenopodium album</i>	lambsquarters	0
<i>Cichorium intybus</i>	common chicory	0
<i>Cirsium arvense</i>	Canada thistle	0
<i>Daucus carota</i>	Queen Ann's Lace	0
<i>Erigeron annuus</i>	eastern daisy fleabane	0
<i>Lolium perenne</i>	perennial ryegrass	0
<i>Medicago lupulina</i>	black medick	0
<i>Phragmites australis</i>	common reed	0
<i>Plantago lanceolata</i>	English plantain	0
<i>Taraxacum officinale</i>	common dandelion	0

All plant species identified within the limits of proposed Well Pad 2 had a zero (0) FQI rating. The mean *C value* of vegetative community was calculated to be 0 and the FQI was calculated at 0, the giving this area a low-quality rating.

3.3 Soils

Prior to the field investigation, the USDA Natural Resources Conservation Service (NRCS), Web Soil Survey was reviewed for the well pads and section to gain available background soils information. A NRCS Web Soil Maps for proposed Well Pad 1 and 2 are in Appendix B and C respectively. The soils within each well pad were investigated through the excavation of a single soil pit per well pad, corresponding to each of the vegetative communities identified during the field investigation.

The first soil pit was excavated within the vegetative community of proposed Well Pad 1 and within the soil map unit Pewamo clay loam (Pf). The NRCS Web Soil Survey suggests that this soil map unit constitutes the majority of the limits for proposed Well Pad 1. The soil pit was dug to a depth of 24 inches to characterize the soil horizon layers, the horizon layer thickness, soil color, and the soil texture. The findings of Soil Pit 1 revealed the existing soils are remnant hydric soils that were drained with the construction of the adjacent Mosquito Wayne County Drain. No evidence of recent hydrology was present within the proposed Well Pad 1. Detailed information from Soil Pit 1 can be found within Table 3 below.

Table 3 - Soil Pit 1

SOIL							Soil Pit	1
Depth (inches)	Matrix		Redox Features					
	Color (Moist)	%	Color (Moist)	%	Type	Location	Texture	Remarks
0-12	10YR 3/1	100					Clay Loam	
12-20	10YR 4/1	60	10YR 4/4	40	C	M	Clay	

The second soil pit was excavated within the location of the vegetative community of proposed Well Pad 2 located within the soil map unit Cut and Fill Land (Cu), shown on the NRCS Web Soil Survey. The second soil pit contained a sandy topsoil layer over heterogeneous clay overburden material that was excavated from other areas and disposed there for land balancing. No native soils were observed at this location. Data was collected in the same manner as for the first soil pit and the findings of Soil Pit 2 are listed below within Table 4.

Table 4 - Soil Pit 2

SOIL							Soil Pit	2
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (Moist)	%	Color (Moist)	%	Type	Location		
0-8	7.5YR 3/2	100					Sandy	Fill
8-24	10YR 4/3	90	10YR 4/2	10	Depletion	Matrix	Clay	Fill

3.4 Threaten and Endangered Species

The result of the Michigan Natural Features Inventory (MNFI) Information Request within Appendix D is fairly large and extensive that includes a 4-mile radius around Section 36, Town 4 South, Range 8 East, where the proposed well pads are located. However, none of the species listed within the MNFI report are known to occur within Section 36 of Sumpter Township where the well pads are proposed. Furthermore, many of the species listed within the report could also be eliminated as potentially occurring within either proposed well pad, despite being identified within a 4-mile radius of the well head, because of the lack of suitable habitat within the proposed well pad limits.

Part 625 also requires that all threatened and endangered species information be reviewed within 1320-foot radius of the proposed wells. For proposed Well Pad 1, three (3) listed species have been recorded within Section 25, Town 4 South, Range 8 East which is located directly north of the proposed well pad.

Three-awned grass (*Aristida longespica*) is a small tufted annual grass that has spikelets with three awns, is about 20-50 cm in height, and known to occur within moist sandy prairies. This species is listed as state-threatened and was last observed in 2001 in Section 25. The soils within proposed Well Pad 1 are clay loams. Sullivant's milkweed (*Asclepias sullivantii*) is a perennial forb of lakeplain prairies and has leaves opposite with wavy margins, sessile and strongly ascending. The flowers are a pale pink. This plant is also state-threatened and was last observed in Section 25 in 2016. Lastly, short-fruited rush (*Juncus brachycarpus*) is a perennial rhizomatous rush of intermittently wet sandy soils that has leaves with hard cross-partitions, terminal globose inflorescence, and plump capsules shorter than the tepals, has seeds without pale tails, and three (3) stamens. This plant is also state-threatened and was last observed in Section 25 in 2014.

During the inspection and vegetative community assessment, DE walked transects spaced at 10-foot apart across the entire vegetative community of proposed Well Pad 1 and confirm the absence of these three listed species.

For Proposed Well Pad 2, there are two (2) sections that occur within the 1,320-foot radius of the proposed well. Section 31, Town 4 South, Range 9 East, and Section 6, Town 5 South, Range 9 East, both occur within 1,320 feet of the proposed well. However, the MNFI report does not list any threatened or endangered species for these two sections.

Lastly, the limits for proposed Well Pad 1 and 2 have both been continually disturbed for many decades, either by past agricultural practices or land fill operations. The disturbed nature of the clay loam soils as detailed above, and the aforementioned degraded floristic quality for both proposed well pads are the primary factors why no listed species were identified within the well pad limits.

3.5 Hydrologic Features

The action area was reviewed for hydrologic features such as wetlands, lakes, streams, and floodplains.

In the state of Michigan, the federal law that protects wetlands, lakes, and streams, is Section 404 of the Clean Water Act (Section 404). Section 404 has been delegated from the U.S. Environmental Protection Agency to the state, and is administered by the EGLE on inland waters. The U.S. Army Corps of Engineers retains authority over wetlands within 1000 feet of the Great Lakes and their connecting waters (St. Mary's, St. Clair, and Detroit Rivers), and waters protected under the Section 10 of the Rivers and Harbors Act. The proposed well pads are located inland where EGLE administers both the federal and state laws.

3.51 Wetlands

Wetlands are characterized by the presence of hydrophytic vegetation (plants adapted to saturated soils), hydric soils (permanently or seasonally saturated by water, resulting in anaerobic conditions), and hydrology (the presence or evidence of water within the upper soil limits). The EGLE administers the state law that protects wetlands, Part 303 Wetlands Protection (Part 303), of the Natural Resources and Environmental Protection Act, 1994, P.A. 451, as amended (NREPA).

Based on the criteria outlined within Part 303, no wetlands were identified within the proposed well pads. Well Pad 1 was dominated by red clover, (*Trifolium pratense*), and tall fescue (*Schedonorus arundinaceus*). Both species are rated as upland vegetation. Some wetland rated vegetation was noted within vehicle ruts within a small portion of Well Pad 1. However, the wetland plants only constituted a very small percentage of the overall vegetative community

which was predominately upland agricultural forbs and grasses. The soils of Well Pad 1 were classified as hydric soil indicator A11 Depleted Below Dark Surface; however, these were determined to be remnant hydric soils that occurred prior to the construction of the adjacent county drains and historic agricultural practices. There were no wetland hydrology indicators found within the limits of Well Pad 1. It is DE opinion that the location Well Pad 1 was likely a southern hardwood swamp prior to the construction of the county drain system, and the alteration of the hydrology since converted the area to upland. The wetland data sheets for proposed Well Pad 1 is located in Appendix E.

Proposed Well Pad 2 is largely made up of roads and an existing effluent collection tank system. Only a small portion of this pad's limits is vegetated. The dominant vegetation documented within proposed Well Pad 2 is perennial rye grass (*Lolium perenne*) and English plantain (*Plantago lanceolata*) and both are rated as upland vegetation. There were no signs of hydrology or hydric soil indicators identified within the limits of proposed Well Pad 2. The wetland data sheets for this proposed pad are in Appendix F.

Part 625 requires that wetland information be provide within 1,320-foot radius of the proposed wells. Using the EGLE Wetland Map Viewer, and available aerial photos DE has shown the potential wetland areas within the 1,320-foot radius and outside the direct impact of the proposed 200-foot by 200-foot well pads in Figures 2 and 3.

Lastly, a review of the EGLE wetland map viewer revealed that there are recorded conservations easements over wetlands mitigations constructed outside the limits of, but adjacent to, Well Pad 1. The intent of EGLE conservation easements are to protect the wetland mitigation sites from any future development or alteration. A modification to a recorded EGLE conservation easement requires review and approval by the EGLE director. Extra precaution should be used while developing Well Pad 1 to avoid any impacts to these conservation easements. A map of the EGLE conservation easements adjacent to Well Pad 1 are showed in Figure 4. There are no recorded conservation easements adjacent to well Pad 2.

3.52 Lakes and Streams

The EGLE also administers Part 301, Inland Lakes and Streams (Part 301), of NREPA. Part 301 defines an inland lake or stream as a natural or artificial lake, pond, or impoundment; a river, stream, or creek which may or may not be serving as a drain as defined by the drain code of 1956, 1956 PA 40, MCL 280.1 to 280.630; or any other body of water that has definite banks, a bed, and visible evidence of a continued flow or continued occurrence of water, including the St. Mary's, St. Clair, and Detroit Rivers. An inland lake or stream does not include the Great Lakes, Lake St. Clair, or a lake or pond that has a surface area of less than 5 acres.

Based on the criteria outlined in Part 301, no lakes or streams as defined under Part 301 were identified within the proposed limits of Well Pad 1 and Well Pad 2. A small storm water pond exists adjacent to proposed Well Pad 2 this is not regulated under Part 301.

Part 625 also requires that surface water information be provide within 1,320 feet of the proposed wells. Using the EGLE Wetland Map Viewer, and available aerial photos DE has shown the potential streams within the 1,320-foot radius and outside the direct impact of the proposed 200-foot by 200-foot well pads in Figures 2 and 3.

3.53 Floodplains

The EGLE also regulates certain activities within 100-year floodplains under Part 31, Water Resources Protection (Part 31), of NREPA. A 100-year floodplain is the area adjacent to streams that have a 1% chance of being inundated in any given year. The FEMA determines the limits of the 100-year floodplain and MDEQ administers Part 31. Well Pad 1 is located within a floodplain mapped by FEMA. This mapped floodplain may or may not be accurate. In order to confirm if the area where the well pad is proposed is a regulated floodplain by EGLE, survey elevations will need to be obtained within the limits of the proposed earthwork. If the elevations fall below the mapped regulated 100-year floodplain elevation, EGLE will likely require a permit to fill the 100-year floodplain.

Well Pad 2 is located outside any mapped floodplains. The FEMA maps for Well Pad 1 and Well Pad 2 are within Figure 5.

3.54 Natural Rivers

There are 16 designated natural river systems in Michigan, mostly located in the northern lower peninsula and the upper peninsula. Michigan's natural rivers program is a river protection effort that protects the natural quality of select river systems throughout the state by regulating their use and development through zoning rules. There are no designated natural rivers within the limits of the proposed well pads or within 1,320 feet of the proposed wells.

3.6 Critical Dunes

Michigan's critical dune areas protected by Part 353, Sand Dunes Protection and Management of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Critical dunes extend along much of Lake Michigan's shoreline and the shores of Lake Superior. A review of state critical dunes area map in Figure 6 reveals there are no critical dunes in Wayne County.

3.7 Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. Michigan has approximately 51,438 miles of river, of which 656.4 miles are designated as wild and scenic. All wild and scenic rivers are located in the Michigan's upper peninsula and the northern lower peninsula. There are no wild and scenic rivers in Wayne County per the Michigan designated [river map](#).

3.8 Coastal Zone Management

Michigan's Coastal Management Program was established in 1978 in partnership with the National Oceanic and Atmospheric Administration to protect, preserve, restore, enhance and wisely develop the coastal natural resources and cultural heritage on the nation's longest freshwater coastline. A review of the Wayne County communities listed on the [EGLE coastal zone boundary maps webpage](#) indicates that Sumpter Township does not have any coastal zone boundaries.

3.9 National Historic Preservation

The National Historic Preservation Act (NHPA; Public Law 89-665; 54 U.S.C. 300101 et seq.) is legislation intended to preserve historical and archaeological sites in the United States of America. The National Register of Historic Places (NRHP) is the United States federal government's official list of districts, sites, buildings, structures and objects deemed worthy of preservation for their historical significance. A review of the NRHP's web based spatial data [geographic information systems map](#) reveals no historic places are listed within Section 36, Town 4S, Range 8E, Sumpter Township, Wayne County, Michigan.

4.0 CONCLUSIONS

The proposed limits for both well pads were assessed for tree information, vegetative communities, soils, threatened and endangered species, hydrologic features, and critical dunes. Based on the information obtained from the pre-inspection and field investigation data, the following conclusions were made:

1. Well Pad 1

- a. There are no trees within the limits of Well Pad 1.
- b. The vegetation community is dominated by non-native adaptive upland plants and scored a low FQI rating.
- c. The soils were found to be remnant hydric soils with low chromas and redox features. The hydric soil indicator Depleted Below Dark Surface was identified within the soil pit. The mapped soil unit is Pewamo clay loam (Pf) which is listed as a hydric soil.
- d. No wetlands are present within Well Pad 1. The well pad is colonized and dominated by upland vegetation and is without any indicators of hydrology. Wetlands are located within 1,320-feet of the proposed well pad.
- e. There are no streams within the limits of the proposed well pad. Streams (Mosquito Drain) do exist within 1,320 feet of the proposed well pad.
- f. The FEMA FIRM map depicts a 100-year floodplain and floodway for the Mosquito Drain within the area of the proposed well pad. Survey is necessary to confirm if the on-ground elevations are above or below the mapped 100-year floodplain.
- g. No natural rivers or critical dunes exist within the proposed well pad or within 1,320 feet of the proposed well pad.

2. Well Pad 2

- a. There are no trees within the limits of Well Pad 2.
- b. The vegetation community is dominated by non-native adaptive upland plants and scored a low FQI rating.
- c. The soils were found to be non-hydric soils with bright chromas. The mapped soil unit is Cut and Fill Land (Cu), which is consistent with the fill material identified within soil pit 2.
- d. No wetlands are present within Well Pad 2. The well pad is mostly developed for an effluent collection system, with fringe areas colonized and dominated by mowed upland vegetation, and is without any indicators of hydrology. Wetlands are located within 1,320-feet of the proposed well pad.
- e. There are no streams within the limits of the proposed well pad. A stream (Mosquito Drain) does exist within 1,320 feet of the proposed well pad.
- f. The FEMA FIRM map does not show any floodplains within the limits of proposed Well Pad 2. A floodplain for the Mosquito Drain does exist within 1,320 feet of the proposed well.
- g. No natural rivers or critical dunes exist within the proposed well pad or within 1,320 feet of the proposed well pad.

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